Depression and Anxiety in Adolescents With Pediatric-Onset Spinal Cord Injury

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Background: Little is known about depression and anxiety in adolescents with spinal cord injury (SCI). **Objective:** To examine how depression, anxiety, suicidal ideation, and usage of treatment differ by age and sex among adolescents with SCI. **Method:** Youth 12 to 18 years old who had acquired SCI at least 1 year prior were recruited from 3 specialty hospitals. They completed the Children's Depression Inventory (ages 12-17 years) or Beck Depression Inventory-II (18 years), and Revised Children's Manifest Anxiety Scale (12-18 years). Analyses assessed differences between younger and older adolescents and between males and females. **Results:** The 236 participants were an average age of 15.58 years (*SD* 1.98), 58% were male, and 60% Caucasian. Average age at injury was 10.57 years (*SD* 5.50), and 62% had paraplegia. For depression, 5.5% of adolescents ages 12 to 17 years exceeded the clinical cutoff and 12.7% of 18-year-old adolescents fell into a range of moderate or severe depression. For anxiety, 10.6% of adolescents ages 12 to 18 years exceeded the clinical cutoff. Univariate results revealed that older adolescents were more depressed than younger adolescents, and girls were more anxious than boys. An interaction between sex and age emerged, in that older adolescent girls were significantly more anxious than other youth. Older adolescents were also more likely to be taking medications for emotional, psychological, or behavioral reasons. Reports of suicidal ideation did not differ by adolescent age or sex. **Conclusion**: For these adolescents, depression differed with age, and anxiety differed based on age and sex. Implications for intervention include early identification and treatment for struggling adolescents. **Key words:** *anxiety, depression, pediatric onset*

In the United States, nearly 25% of the population is under the age of 18 years old.[1] The health and well-being of these youth comprise an important public health concern and include not only physical health but also overall psychosocial health. Psychosocial health in children and adolescents is often defined in terms of meeting expected developmental, social, and emotional milestones and by having secure attachments, satisfying social relationships, and effective coping skills. Psychosocially healthy children enjoy a positive quality of life. This includes functioning well at home, in school, and in their communities and being free from psychopathology.[2] In the adolescent population, physical and mental health issues can affect every aspect of life, including learning, social participation, and the inevitable transition into adulthood. Two particularly concerning mental health issues for adolescents are depression and anxiety.

Depression and depressive disorders are identified by the World Health Organization (WHO) as "priority mental health disorders of adolescence" due to high prevalence, recurrence, and the significant complications and impairment that can occur.[3] Lifetime prevalence rates for major depression in adolescents are 15% to 20% with high recurrence rates.[4] These numbers are particularly concerning as depression can lead to truancy, substance abuse, unplanned pregnancy, and suicide; depression can also follow an adolescent into adulthood.[5] Depressed adolescents often suffer ongoing issues, with 20% to 40% having more than one episode within 2 years, and 70% having more than one episode before adulthood.[6] It should be noted that one of the risk factors that increases the chances of depression is experiencing trauma, abuse, or a long-term illness or disability, such as experiencing spinal cord injury (SCI); however, little is known about post injury depression in adolescents with SCI.

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Although depression statistics are concerning, the combined prevalence of anxiety disorders is actually higher than that of virtually all other mental health disorders of childhood and adolescence.[7] Anxiety disorders are the most common mental health disorders in childhood and include separation anxiety, generalized anxiety disorder, and social phobias. Anxiety disorders are also among the earliest psychiatric conditions to manifest, with a median age of 11 years.[8] General anxiety prevalence rates are 5.7% to 12% among children under 18 years.[9] Again, little is known about how these rates compare to those among adolescents with SCI.

Depression and anxiety can affect adolescents regardless of gender, social background, income level, race, or disability. Untreated depression is the number one cause of suicide, and suicide is the third leading cause of death among adolescents. In fact, suffering from depression can make an adolescent as much as 12 times more likely to attempt suicide.[10] Similarly, when left untreated, anxiety disorders in children increase the risk for psychological disorders in adulthood, including depression and substance abuse, and can result in significant academic, social, and familial impairment.[11,12]

These statistics are sobering, yet they only account for the typically developing adolescent. What are the unique issues for these mental health disorders in the SCI population? We know that an SCI can be debilitating and affects not only physical functioning but psychosocial health as well. Depression has been noted to occur commonly among adults with SCI.[13] Depressive disorders appear to be more common in the adult SCI population than in the nondisabled population, with depression rates for adults with SCI ranging between 14% and 35% for clinically significant symptomology and 10% to 15% for major depressive disorder.[14-16] Hoffman et al[17] found that 18% to 21% of people with SCI met the criteria for major depressive disorder, whereas North[18] found that 25% of those with SCI experienced anxiety. One study found that 27% of adults who sustained pediatric SCI showed depressive symptoms, with only 3% reporting symptoms consistent with major depressive disorder.[19] Occurrence of major depressive disorders in pediatric-onset SCI appears to be markedly below that reported for persons with adult-onset SCI, although this may be due to differences in methodology and measurement.[19] Another study looking at youth with SCI under the age of 18 years found that 6% reported significant levels of depression and 13% reported anxiety.[20] Although it was previously thought that mental health issues, like depression, were inevitable after injury, it appears that this is not the case, particularly for those with pediatric-onset SCI.[21]

The literature offers a healthy start to understanding anxiety and depression among adolescents with pediatric-onset SCI, but an examination of depression and anxiety among adolescents in particular is lacking. Understanding prevalence in this population is particularly important, because adolescents with SCI may be at even greater risk. Increased recognition combined with awareness of the appropriate treatment regimens can help lead to improved SCI care in the rehabilitation setting for adolescents as well as improved quality of life as they transition to adulthood. The purpose of the current study was to describe the prevalence of depression and anxiety among adolescents with SCI and to determine whether boys or girls or youth in different stages of adolescence are more at risk for these mental health problems.

Method

Participants and recruitment

The current study presented descriptive data on depression and anxiety for youth 12 to 18 years old and investigated differences in depression and anxiety by child age and sex. Because different measures were used to assess depression among youth ages 12 to 17 years and youth age 18 years, age-based comparisons related to depression were limited to youth ages 12 to 17 years, and sex-related analyses were conducted separately for youth ages 12 to 17 years and youth age 18 years. Details on methodology are presented below.

Study participants were recruited as part of a larger research project assessing psychosocial outcomes among youth with SCI and their primary caregivers. For the current study, English- and Spanish-speaking youth with SCI who were 12 to 18 years old, had been injured at least 1 year, and

were receiving care from 1 of 3 pediatric specialty hospitals within a single hospital system were recruited.

Instruments

A study-specific demographics questionnaire was completed by the adolescents' primary caregiver and included questions about race and whether the adolescents were currently receiving treatments for psychological or behavioral reasons, including counseling and/or pharmacological interventions. Patients' sex, date of birth, date of injury, injury etiology, and level and severity of injury were obtained from medical records. Injury severity was assessed using the American Spinal Injury Association Impairment Scale (AIS).[22]

Depression was measured using 2 tools, depending on the adolescent's age. For youth 12 to 17 years old, we used the Children's Depression Inventory (CDI), a 27-item self-reported measure of depression for youth 7 to 17 years old.[23] Each item is composed of 3 statements, and the adolescents choose the statement that is most true for them. These items compose 5 subscales that measure different components of depression, including anhedonia (inability or reduced ability to experience pleasure), negative self-esteem (personal belief that you are not good at anything), ineffectiveness (inability or lack of motivation to complete tasks), interpersonal problems (difficulty developing and maintaining close relationships), and negative mood (irritability or anger). The CDI yields 2 scores: an overall (raw) depression score, and standardized *T* score based on the age and sex of the youth. The CDI has been demonstrated in past work as a reliable and valid tool, and internal consistency was excellent for the current sample (Cronbach's $\alpha = 0.889$). For the current article, 2 outcomes were used for the CDI: the mean (raw) depression score, and the number of youth exceeding the clinical cutoff. Per the instrument authors, a clinical cutoff *T* score of greater than or equal to 65 was used to indicate clinically significant depression. In addition, data are presented from question 9 of the CDI, which asks about suicidal ideation. Specifically, this question asks youth to select the option that is most true for them, from the following 3 choices: (1) I do not think about killing myself; (2) I think about killing myself, but I would not do it; or (3) I want to kill myself.

For youth 18 years old, we used the Beck Depression Inventory-II (BDI-II), a 21-item self-reported measure of depression for adolescents and adults older than 12 years.[24] The BDI-II has been used extensively in the past and has demonstrated reliability and validity; internal consistency was excellent for the current sample (Cronbach's $\alpha = 0.917$). For the current study, 2 outcomes were used for the BDI-II: the mean depression score, and the number of youth falling into the moderate (scores 20-28) or severe (scores 29-63) categories of depression, as stipulated by the instrument authors. In addition, similar to the CDI, data are presented from item 9, which asks about suicidal ideation. In particular, this question asks participants to select the option that is most true for them, from the following 4 choices: (1) I don't have any thoughts of killing myself; (2) I have thoughts of killing myself, but I would not carry them out; (3) I would like to kill myself; or (4) I would kill myself if I had the chance.

Anxiety was measured using the Revised Children's Manifest Anxiety Scale (RCMAS), a 37-item self-reported measure of anxiety for youth ages 6 to 19 years.[25] The RCMAS includes a list of common anxiety symptoms, with a yes/no response set. These symptoms compose 3 subscales that measure different aspects of anxiety, including physiological (suggests that the youth experiences physiological responses to anxiety), worry/oversensitivity (suggests that the youth internalizes anxiety and may feel overwhelmed when attempting to relieve anxiety), and fear/concentration (suggests that the youth feels unable to meet the expectations of other significant people in his or her life). Similar to the CDI, the RCMAS yields 2 scores: an overall (raw) anxiety score, and standardized *T* score based on the age, sex, and race of the youth. The RCMAS has demonstrated acceptable reliability and validity in the past; internal consistency was excellent for the current sample (Cronbach's $\alpha = 0.805$). Two outcomes were used for the RCMAS, including the mean (raw) anxiety score and the

clinical cutoff (stipulated by instrument authors as *T* score >60).

Procedures

Youth and primary caregivers meeting eligibility criteria were approached to participate during regularly scheduled outpatient clinic visits or inpatient hospitalization stays. After obtaining informed consent and/or assent, youth completed survey instruments and their primary caregiver completed a demographics questionnaire. Survey administration time was generally between 45 and 75 minutes. The project secured approval from the institutional review board at each of the 3 hospitals, and ethical treatment of human subjects was followed throughout the research process.

Data analysis

Descriptive statistics were used to characterize the sample, including demographic characteristics, mean scores on mental health measures, and the percentage of youth exceeding the clinical cutoffs (standardized *T* scores). Scores on the CDI, BDI-II, and RCMAS demonstrated significant skew, so nonparametric tests (Mann-Whitney tests) were used to assess mean differences[26] and log-transformed versions of the CDI and RCMAS were used as dependent variables in 2-way analysis of variance (ANOVA) tests to determine interaction effects between age and sex. Finally, chi-square analyses were used to assess differences between groups in terms of percentage of youth exceeding the clinical cutoffs.

Results

Participants

The 236 participants were an average age of 10.57 years at time of injury (*SD* 5.50) and 15.58 years at interview (*SD* 1.98). Forty-four percent were 12 to 15 years old and 56% were 16 to 18 years old. Fifty-eight percent of youth were male; 60% were Caucasian, 20% Hispanic, 7% African American, 2% American Indian, 2% Asian, and 4% other. (Fifteen youth were missing data on race.) Regarding neurological impairment, 11% of youth had C1-C4 AIS ABC injuries, 20% had C5-C8 AIS ABC injuries, 51% had paraplegia AIS ABC injuries, and 12% AIS D injuries. (Fifteen youth were unable to be categorized regarding their neurological impairment due to missing data on the AIS.) In terms of injury etiology, 48% were injured due to vehicular or pedestrian accidents, 24% medical or surgical complications, 13% sports injuries, 9% violence, 5% falls or flying objects, and 1% other/unknown.[27]

Depression and anxiety

Tables 1 and **2** present information on the percentage of youth who exceeded the clinical cutoffs for depression and anxiety, respectively. As seen in **Table 1**, older adolescents (16-17 years) were significantly more depressed than younger adolescents (12-15 years) (z = -2.05, P = .040). Older adolescents also seemed to be more likely to fall above the clinical cutoff for depression, but this value did not reach statistical significance [χ^2 (1, N = 181) = 3.13, P = .077]. Specific to 18 year olds, girls seemed more depressed than boys (z = -0.730, P = .465) and seemed more likely to exceed the clinical cutoff [χ^2(1, N = 55) = 2.59, P = .108], but these values were not statistically significant. As seen in **Table 2**, girls were significantly more anxious than boys (z = -2.16, P = .030). In addition, although not statistically significant, older adolescents (16-18 years) seemed to be more likely to score above the clinical cutoff for anxiety than younger adolescents (12-15 years) [χ^2(1, N = 236) = 2.78, P = .095].

We next looked more in-depth at adolescents' mean depression and anxiety scores and assessed the relationship between age (ages 12-17 years for depression, and ages 12-18 years for anxiety) and sex in regard to depression and anxiety. Regarding depression, there was no significant interaction between child age and sex, F(1, 177) = 1.816, P = .180. However, ANOVA results did reveal a significant interaction for child anxiety by child age and sex, F(1, 232) = 5.483, P = .020, meaning that the effect of child age on anxiety depends on child sex (and vice versa). Inspection of the means revealed that older adolescent girls were more anxious than younger adolescent girls and boys and older adolescent boys (**Table 3**).

Table 1. Overall depression scores by child age and by child sex

Adolescents	*n*	Mean (*SD*), median	Scoring above clinical cutoff[a]
Ages 12-17 years	181	6.92 (6.93), 5.00	5.5%
Child's age			
12-15	103	5.86 (5.87), 4.00*	2.9%
16-17	78	8.32 (7.94), 6.00*	9.0%
Child's sex			
Boys	98	6.77 (6.89), 5.00	4.1%
Girls	83	7.11 (7.01), 5.00	7.2%
Age 18 years	55	10.62 (9.14), 8.00	12.7%
Child's sex			
Boys	38	9.24 (6.50), 8.00	7.9%
Girls	17	13.71 (13.03), 10.00	23.5%

[a]For adolescents 12-17 years old, the clinical cutoff represents the clinically significant *T* score stipulated by the authors of the Children's Depression Inventory ($T \geq 65$). For adolescents 18 years old, the clinical cutoff represents youth who have fallen in the moderate or severe categories, as stipulated by the authors of the Beck Depression Inventory-II.

*Values are significantly different from each other, $P < .05$.

Table 2. Overall anxiety scores by child age and by child sex

Adolescents	*n*	Mean (*SD*), median	Scoring above clinical cutoff[a]
	236	8.00 (5.85), 7.00	10.6%
Child's age, years			
12-15	103	7.25 (5.55), 6.00	6.8%
16-18	133	8.58 (6.02), 7.00	13.5%
Child's sex			
Boys	136	7.32 (5.67), 6.00*	11.0%
Girls	100	8.93 (5.98), 8.00*	10.0%

[a]The clinical cutoff represents the clinically significant *T* score stipulated by the authors of the Revised Children's Manifest Anxiety Scale ($T > 60$).

* Values are significantly different from each other, $P < .05$.

Table 3. Examining mean depression and anxiety scores by child age and sex groupings

	Age[a]	
Sex	**Younger adolescents**	**Older adolescents**
Depression[b]		
Boys	6.17 (5.92) ($n = 52$)	7.43 (7.85) ($n = 46$)
Girls	5.55 (5.87) ($n = 51$)	9.59 (8.01) ($n = 32$)
Anxiety*		
Boys	7.50 (5.80) ($n = 52$)	7.20 (5.61) ($n = 84$)
Girls	7.00 (5.33) ($n = 51$)	10.94 (6.01) ($n = 49$)

Note: Values given as mean (*SD*).

[a]Younger adolescents included youth 12-15 years old, and older adolescents included youth 16-17 years old for depression and 16-18 years old for anxiety.

[a]No significant interaction effect noted.

*Significant interaction effect noted, $P < .05$.

Table 4. Suicidal ideation for youth 12-17 years old

	Suicidal ideation		
	I do not think about killing myself	I think about killing myself but I would not do it	I want to kill myself
All adolescents ages 12-17 years (*n* = 181)	82.9% (*n* = 150)	16.0% (*n* = 29)	1.1% (*n* = 2)
Child's age			
12-15 (*n* = 103)	85.4% (*n* = 88)	14.6% (*n* = 15)	0
16-17 (*n* = 78)	79.5% (*n* = 62)	17.9% (*n* = 14)	2.6% (*n* = 2)
Child's sex			
Boys (*n* = 98)	84.7% (*n* = 83)	14.3% (*n* = 14)	1.0% (*n* = 1)
Girls (*n* = 83)	80.7% (*n* = 67)	18.1% (*n* = 15)	1.2% (*n* = 1)

Table 5. Suicidal ideation for youth 18 years old

	Suicidal thoughts or wishes			
	I don't have any thoughts of killing myself	I have thoughts of killing myself, but I would not carry them out	I would like to kill myself	I would kill myself if I had the chance
Child's age				
18 (*n* = 55)	89.1% (*n* = 49)	10.9% (*n* = 6)	0	0
Child's sex				
Boys (*n* = 38)	92.1% (*n* = 35)	7.9% (*n* = 3)	0	0
Girls (*n* = 17)	82.4% (*n* = 14)	17.6% (*n* = 3)	0	0

Suicide

Among adolescents ages 12 to 17 years overall, 16% reported that they think about suicide but would not follow through and 1.1% indicated they wanted to commit suicide (**Table 4**). Among 18 year olds, 10.9% indicated that they have thought about suicide but would not carry it out, and none responded that they wanted to kill themselves (**Table 5**). Although no significant differences emerged in terms of suicidal ideation by child age or sex, older adolescents, and older girls in particular, seemed to more frequently report having thoughts of suicide.

Usage of treatment

Finally, we examined usage of mental health treatment for youth (**Table 6**). Among youth overall, 12.4% were receiving counseling services; 17.4% were taking medications for emotional, psychological, or behavioral reasons; and 23.3% were enrolled in counseling and/or taking medications. When looking at differences by age of adolescent, older adolescents (23.5%) were significantly more likely to be on medications than younger adolescents (10.1%) [$\chi^2(1, N = 218) = 6.77, P = .009$]. There were no significant differences between adolescent girls and boys in terms of their usage of treatment, but boys seemed to be more likely to receive treatment than girls.

Discussion

The present study provides critical information to the body of knowledge on adolescent SCI and psychosocial issues. This particular study looked

Table 6. Frequency of treatment received

	Receiving counseling services	Currently on medications for emotional, psychological, or behavioral reasons	Counseling and/or medications
All adolescents ages 12-18 years (*n* = 219)	12.4%	17.4%	23.3%
Child's age			
12-15 (*n* = 99)	12.2%	10.1%*	18.2%
16-18 (*n* = 120)	12.5%	23.5%*	27.5%
Child's sex			
Boys (*n* = 123)	14.8%	18.7%	26.0%
Girls (*n* = 96)	9.4%	15.8%	19.8%

*Values are significantly different from each other, $P < .01$.

at the prevalence of depression and anxiety in the adolescent SCI population. This group of youth with SCI showed levels of depression and anxiety that were comparable to their typically developing peers, with 5.5% of youth 12 to 17 years old exceeding the clinical cutoff for depression, 12.7% of 18 year olds scoring in the range of moderate or severe depression, and 10.6% of youth 12 to 18 years old exceeding the clinical cutoff for anxiety. Knowing that prevalence scores for youth without SCI range between 15% and 20% with high recurrence for depression and between 5.7% and 12% for anxiety, it can be said that these youth with SCI appear to be doing better than their typically developing peers in relation to depression and mirroring their peers in relation to anxiety.[4,9]

For both anxiety and depression, adolescents with SCI seem to be faring better than adults with SCI. A recent study by Fann et al[28] highlighted the high prevalence of depression in adults with SCI as well as the high lifetime prevalence of other psychiatric disorders, particularly anxiety. The prevalence of probable major depression in this study was at 23% for adults with SCI; 60% of this group reported a prior history of psychiatric diagnosis, most commonly, depression, followed by generalized anxiety. Although the prevalence of depression and anxiety appears to be relatively low for adolescents with SCI, the concern might be what happens as they transition into adulthood. Are these youth at increased risk of developing depressive symptoms and/or anxiety? Anderson et al[19] found that 27% of adults who sustained SCI as children showed depressive symptoms, a higher percentage than seen in the current adolescent SCI group. However, only 3% of that adult group was noted to have major depressive disorder – a relatively small percentage in comparison to those sustaining SCI as adults and to the normative population. These data are encouraging, yet it is important to remember that childhood anxiety increases the risk for adult psychiatric disorders including depression and substance abuse, and depressed teenagers are often underdiagnosed, misdiagnosed, and undertreated.[11,12,29] Any percentage of youth struggling with depression or anxiety warrants attention and intervention.

The low prevalence of depression and anxiety in the current study may be in part a function of the sampling criteria incorporated, in that youth were assessed 1 year or more post injury. In contrast, a recent study looking at the impact of postinjury depression after major trauma in adolescents found that 41% were diagnosed with depression at discharge.[30] Further, anxiety has been associated with shorter duration of injury.[20] Perhaps much of the adaptation to SCI occurs within the first year. Future research should investigate rates of mental health problems in the immediate postinjury period and should strive to understand what mechanisms of adaptation occur during this time. Another possible explanation for these relatively low rates of mental health problems may be the proactive mental health care

being received by youth within the 3 participating hospitals. In particular, routine care for youth with SCI involved seeing a clinical psychologist and clinical social worker twice each year; this care may have prevented problems from developing for the majority of youth. Future research should investigate the resilience of this group of adolescents, as understanding the precipitating factors leading to their positive mental health can have implications for the development of effective interventions.

Although depression and anxiety may not appear to be a significant problem for the majority of this group of adolescents, a minority of youth reported experiencing significant depression or anxiety, the consequences of which must be taken into consideration. Depression is the leading cause of suicide and suicide is the third leading cause of death in the adolescent population. With 13.8% of all high school students admitting that they have considered suicide, we must all take notice.[6] For the current group of youth with SCI, the numbers are similar, with 17.1% of 12 to 17 year olds and 10.9% of 18 year olds reporting suicidal ideation. Any percentage is too high in this arena and necessitates early assessment and intervention. Data begin to suggest that older youth and girls may be more likely to experience suicidal ideation; these trends should be examined in future research among larger samples of adolescents. Further, even though overall rates of depression and anxiety fell within or below the range for typically developing youth, the group of older adolescents experienced significantly greater depression and girls experienced significantly greater anxiety. In particular, older adolescent girls were found to experience more anxiety than younger adolescent girls or adolescent boys. These results mimic the general population, in that girls are 3 times more likely to suffer from depression than boys and the risk of depression rises as youth age.[30] Girls are also more likely to experience anxiety, although past research with youth without disabilities has found no association between anxiety and age.[31]

Rates of anxiety and depression seem to be following general trends, but the rates of treatment are of concern. Results of the current study found that, despite older adolescent girls being most at risk in terms of anxiety, boys seem more likely to be receiving treatment. This runs contrary to past research with youth without disabilities, as adolescent girls have historically been more likely to seek treatment for mental health disorders than adolescent boys.[32] It is possible that boys may be demonstrating more external symptoms, resulting in parents being more likely to refer them for treatment. Parents may be more concerned about the adjustment of boys (with males typically being viewed by our society as the physically stronger sex) and more confident in the ability of their daughters to adjust to injury. These findings warrant further study.

Those who struggle with depression and/or anxiety have been found to have a lower overall quality of life.[20] This association, in itself, makes early recognition and treatment of mental health disorders in the rehabilitation setting a priority. Understanding the subtle nuances of depression and anxiety in this population will ensure that all rehabilitation professionals will be knowledgeable enough to refer and assist these youth as they adapt to SCI. Even if children do not appear to be struggling with depression and/or anxiety, careful monitoring is needed particularly as they age through the teenage years. This knowledge can assist health care professionals in looking for and recognizing changes that may occur as youth with SCI progress through the already turbulent teenage years.

There were several limitations in the current study. First, we did not have comparable depression data for youth 18 years old. As mentioned, for these older adolescents, we assessed depression using the BDI-II instead of the CDI; as a result, we were able to report on data regarding suicide ideation but not mean depression scores or percent of youth exceeding the clinical cutoff. Second, youth were recruited from 1 of 3 hospitals within the same hospital system and do not necessarily represent the population of youth with SCI in the United States. Finally, data for this study were collected using standardized depression and anxiety screeners but not in-depth, in-person clinical interviews. Although these tools have been used with youth with SCI in past research,[20] they were not developed specifically for youth with disabilities. Related to this, depression scales

have been criticized for assessing physiological symptoms that may be related to the injury, resulting in increased depression scores. Future research should continue to examine the validity of these tools among youth with SCI.

Conclusion

Mental health issues can affect the well-being of all adolescents. Understanding how these issues, particularly depression and anxiety, affect adolescents with SCI may be crucial to their overall well-being. This study helps to enrich our current understanding of the prevalence of depression and anxiety in the adolescent SCI population. As adolescents age, their risk for experiencing symptoms of anxiety and depression rises. Although rates of depression and anxiety in this population are comparable to those of typically developing youth, prevention and intervention efforts by clinicians are still essential. Future studies should investigate the prevalence of depression and anxiety within the important first year after injury.

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